

UNINTENDED CONSEQUENCES OF A GRANT REFORM: HOW THE ACTION PLAN FOR THE ELDERLY AFFECTED THE BUDGET DEFICIT AND SERVICES FOR THE YOUNG

Lars-Erik Borge and Marianne Haraldsvik

Department of Economics and Centre for Economic Research

Norwegian University of Science and Technology

N-7491 Trondheim, Norway

e-mails: lars.borge@svt.ntnu.no, marianne.haraldsvik@svt.ntnu.no

Abstract

The Action Plan for the Elderly (APE) was implemented by the Norwegian parliament in 1997 to increase capacity and improve service standards within the care for the elderly sector. Care for the elderly is a local government responsibility, and the main financial element in APE was a temporary investment grant of a matching type to the local authorities. This type of grant is likely to have adverse effects for other services and the budgetary balance. We investigate whether APE had such adverse effects using a difference-in-differences approach. There is evidence that APE reduced the growth in child care coverage and increased the budget deficit.

Keywords: Grant reform; Unintended consequences; Difference-in-differences

JEL classification: H70

First rough draft

1. Introduction

In June 1997 the Norwegian parliament decided to implement an Action Plan for the Elderly (APE) in order to increase capacity and improve service standards within the care for the elderly sector. Care for the elderly is a local government responsibility, and the main financial element in APE was a temporary investment grant of a matching type to the local authorities. The purpose of this study is to investigate whether APE had unintended consequences for the budget deficit and services for the young.

The investment grant in APE differs from the typical matching grant in the literature on intergovernmental grants. First, since it is related to investments it represents a subsidy of new capacity and new production. The investment grant does not change the local costs of existing production. Second, since the grant is temporary it affects the intertemporal prices. Investments during the action plan period become relatively less costly than investments before and after.

The design of the investment grant is motivated by a desire to achieve a large impact on capacity and service provision in the care for the elderly sector relatively to the grant amount. However, the desire of a high impact-amount ratio is also likely to produce unintended effects. First, since the grant only subsidizes new capacity and new production “leakage” to other sectors is not an issue. The effect may rather be the opposite as local governments must reallocate resources from other sectors to care for the elderly in order to take advantage of the grant program. Second, since the grant is temporary it provides incentives for local governments to reallocate resources over time. More precisely, resources will be reallocated towards the action plan period. This intertemporal effect tends to weaken the budgetary balance in the action plan period.

The rest of the paper is organized as follows: Section 2 gives a description of APE. We pay particular attention to the investment grant and describe the variation in utilization of APE across local governments. Section 3 discusses empirical strategy and data. The empirical strategy is to identify the effect of APE by using a difference-in-differences approach that makes use the variation in utilization of APE. In this way the paper is linked to the new empirical literature that use modern econometric techniques to identify the causal effect of grant, e.g. Knight (2001), Baicker and Gordon (2004), Gordon (2006), and Dahlberg et al.

(2007). As indicators of service provision in other sectors we use child care coverage and teachers hours per pupil in education. The budgetary balance is described by gross and net operating surplus. The empirical results are presented in Section 4. Our main findings are that APE reduced the growth in child care coverage and increased the budget deficit. Finally, Section 5 offers some concluding remarks.

2. The Action Plan for the Elderly (APE)

In June 1997 the Norwegian parliament decided to implement an Action Plan for the Elderly (APE) in order to increase capacity and improve service standards within the care for the elderly sector. The goals of the plan were to increase the number of man-years increase the number of dwellings for the elderly. Two types of dwellings were considered: specially adapted dwellings and dwellings in nursing homes. Specially adapted dwelling is a recent phenomenon, and has the advantage that it offers great flexibility with respect to the amount of care. The level of care varies from a level similar to private homes to around the clock services as in nursing homes.

The two main financial means under the APE were grants related to current expenditures and investments. The grant related to current expenditures was distributed on the basis of objective criteria like age composition and standardized death rates. It had more or less the same impact as block grants and was included in the block grant system from 2002. In this paper we focus on the investment grant that was of the matching type. The investment grant was a fixed amount for respectively specially adapted dwellings and dwellings in nursing homes. By the start of the APE in 1998 the investment grant was NOK 175,000 (USD 32,000) for specially adapted dwellings and NOK 375,000 (USD 68,000) for nursing homes. The investment grant was not sufficient to cover the investment costs, and in addition to the investment grant local governments receive yearly grants to cover interest payments and debt service. The yearly grants are calculated on the basis of a projected investment cost of NOK 740,000 (USD 135,000) for specially adapted dwellings and NOK 840,000 (USD 153,000) for nursing homes.

Table 1: Number of dwellings with investment grant under APE

Year	1998	1999	2000	2001	2002	2003	Total
# of dwellings	5174	5326	5837	5977	5231	435	27980
# of dwellings nursing homes	1409	1565	2312	3208	2860	158	11512
# of specially adapted dwellings	3765	3761	3525	2769	2371	277	16468
# of local governments	211	206	192	171	165	30	415

Table 1 provides an overview of the number of dwellings with investment grant under APE. The figures include dwellings that were granted investment grant during 1998-2003 and that were finished by January 1, 2005. The 28,000 investment grants in Table 1 amounts to 73% of the total number of investment grants under APE. In our sample, around 40% of the investment grants were given to nursing homes and 60% to specially adapted dwellings.

Table 2: Utilization of APE

	Mean (unweighted)	Mean (weighted)	Standard deviation	Minimum	Maximum
Dwellings per 1000 inhabitants	9.12	7.05	3.80	0	38.66
Specially adapted dwellings per 1000 inhabitants	5.04	4.15	4.16	0	24.10
Dwellings in nursing homes per 1000 inhabitants	4.08	2.89	5.22	0	31.93

The purpose of the paper is to investigate whether APE has affected the budget deficit and other services. The identification is based on the fact that the utilization of APE varies across local governments. As indicator of utilization we use the number of investment grants per 1000 inhabitants. The variation in the utilization of APE is displayed in Table 2. It appears that the average local government received investment grant for 9 dwellings per 1000 inhabitant, of which 5 were specially adapted dwellings and 4 were nursing homes. For all three indicators the (population) weighted averages are lower than the unweighted averages. This observation reflects that larger local governments have utilized APE less than smaller local governments. The variation in utilization of APE is substantial. A total of 18 local governments did not utilize APE at all in the sense that they received no investment grants. In the other end of the scale, the local government with highest utilization received investment grant for nearly 40 dwellings

3. Empirical strategy and data

The empirical analysis is based on a difference-in-differences approach, which means that we analyze whether differences in utilization of APE can explain that local governments experienced different development of budget deficit and services for the young during 1997-2005. The strategy has the advantage that it controls for community specific effects and time specific effects that are common to all local governments.

The starting point is the following equation in levels

$$Y_{it} = \beta_t + \gamma \mathbf{X}_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is services for the young or budget deficit in local government i in periode t , \mathbf{X}_{it} is a vector of controls, β_t is a time-specific constant term, α_i is a community specific term, and ε_{it} is an error term. Let t be 2005 and $t-1$ be 1997. By taking the first difference of equation (1), we get the following expression for the development from 1997 to 2005:

$$\Delta Y_{it} = (\beta_t - \beta_{t-1}) + \gamma \Delta \mathbf{X}_{it} + \Delta \varepsilon_{it} \quad (2)$$

where $\Delta Y_{it} = Y_{it} - Y_{it-1}$, etc. Equation (2) says that the change in services for the young or the budget deficits depend on the change in the controls. The empirical analysis is based on a modification of equation (2) where ΔY_{it} also depends on the utilization of APE:

$$\Delta Y_{it} = (\beta_t - \beta_{t-1}) + \gamma \Delta \mathbf{X}_{it} + \lambda_1 NH_i + \lambda_2 SAD_i + \Delta \varepsilon_{it} \quad (3)$$

We allow investment grants related to nursing homes (NH) and specially adapted dwellings (SAD) to have separate effects. The motivation is that investments in nursing homes and specially adapted dwellings may have very different fiscal effects for the local governments in the sense that they affect current expenditures differently. First, for specially adapted dwellings local governments are allowed to charge a rent that cover costs. Second, the residents of nursing homes receive around the clock service. Consequently, we expect

investment in nursing homes to have the strongest effect on the budget deficit and services for the young. That is, we expect λ_2 to be less in absolute value than λ_1 .

Services for the young include child care and primary and lower secondary education. As indicator of service production for child care we use the share of children 0-5 years of age that is in child care. For education we use the number of teacher hours per pupil as indicator of service provision. Basically one teacher hour is produced when one teacher teaches a class or a group for one hour.

The budgetary balance is measured by two indicators. The first is the net operating surplus, which is defined as current revenues less current expenditures, interest payments, and debt servicing costs. Since the investment grant only covers part of the investment costs, utilization of APE is associated with increased local government borrowing. Consequently, a negative effect of APE on the net operating surplus may just reflect that increased borrowing raises interest payments and debt servicing costs. Our second indicator of budgetary balance is thus the gross operating surplus. It is defined as current revenues less current expenditures and is not directly affected by the amount of borrowing. The operating surpluses are measured per capita in fixed 2005 prices.

As control variables we include local government revenues per capita and the age composition of the population. The revenue measure includes taxes and block grants. Since most local taxes are of the revenue sharing type, these revenues can be considered as exogenous. The age composition is captured by the share of children 0-5 years of age, the share of children 6-15 years of age, the share of elderly 67-79 years of age, and the share of elderly 80 years and above. The variables are mainly included to capture the demand for child care, education, and care for the elderly.

In this version of the paper equation (3) is estimated by ordinary least squares (OLS). Since the difference-in-differences approach allows for community specific effects, we can rule out any simultaneity problem related to fixed factors that affect both Y and the utilization of APE. However, we cannot rule out that utilization of APE correlates with the change in omitted controls. In later versions we will handle this problem by instrumenting the utilization of HPE.

The empirical analyses are based on data for around 430 local governments. Except for a few missing observations, the data set includes all local governments not affected by consolidations during the period under study.

4. Estimation results

In Table 3 we investigate whether APE had any adverse impacts on services for the young. It appears that the educational sector was largely unaffected by APE. Neither of the two utilization variables comes out as significant. In the child care sector on the other hand, utilization of APE is associated with lower coverage. When change in revenues is included as the only control, both utilization variables come out as significant and with the expected negative sign. When we also control for the age composition of the population, *NH* is still highly significant, while *SAD* is only borderline significant.

Table 3: The impact of APE on services for the young
OLS-estimates with absolute t-values in parentheses

	Teacher hours per pupil		Child care coverage	
	A	B	A	B
Specially adapted dwellings (<i>SAD</i>)	-0.045 (0.35)	-0.015 (0.12)	-0.00257 (2.26)	-0.00187 (1.64)
Nursing homes (<i>NH</i>)	0.128 (1.24)	0.135 (1.37)	-0.00223 (2.43)	-0.00196 (2.15)
Change in per capita revenues (NOK 1000)	0.122 (1.34)	0.158 (1.77)	0.00187 (2.30)	0.00185 (2.25)
Change in share 0-5 years		-151.97 (2.69)		-0.838 (1.63)
Change in share 6-15 years		-286.96 (6.22)		-0.642 (1.51)
Change in share 67-79 years		65.765 (1.61)		1.140 (3.02)
Change in share 80 years and above		23.152 (0.32)		0.380 (0.56)
# of local governments	429	429	431	431
R_{adj}^2	0.01	0.12	0.03	0.07

The estimated coefficients of the APE variables are around -0.002, which means that one extra dwelling per 1000 inhabitant is associated with a reduction in child care coverage by 0.2

percentage point. For the local government with the largest utilization of APE the predicted reduction in child care coverage due to APE is 7-8 percentage points. For a local government with average utilization the effect is nearly 2 percentage points. Although the quantitative effects are sizeable, they are small compared to the increase in child care coverage during the period under study. On the national level, child care coverage increased by 15 percentage points from 1997 to 2005.

The service provision for the young is also affected by local government revenues and demographics. Higher revenues are associated with higher child care coverage and to some extent also an increase in teacher hours per pupil. Regarding demographics, there is some evidence that there is disadvantage of being part of a large cohort. An increase in the share of children 6-15 years of age is associated with a reduction in teacher hours per pupil and an increase in the share of children 0-5 years of age is associated with lower child care coverage. This finding is in line with a large literature analyzing the impact of demographic change on public spending, e.g. Poterba (1997), Harris et al. (2001), and Borge and Rattsø (2006). But in contrast to some of these studies, we find no evidence that an aging population threatens spending for the young.

The impacts of APE on budgetary balance are displayed in Table 4. In this case the two utilization variables have very different effects. Investment grants related to specially adapted dwellings has no systematic effect on the budgetary balance, while there is strong evidence that investment grants related to nursing homes have reduced the operating surplus. The point estimate indicates that one extra investment grant for nursing homes will reduce the net operating surplus by around NOK 140, while the impact on the gross operating surplus is NOK 100. This means that up to 30% of the reduction in the net operating surplus may be due to increased interest payments and debt servicing costs related to the investment, while most of the effect goes through current expenditures.

The average local government received investment grant for 4 dwellings in nursing homes. For this average local government APE contributed to a reduction in the net operating surplus by NOK 560 per capita. This effect is quite sizeable and amounts to 1.4% of average per capita revenues.

Table 4: The impact of APE on the operating surplus
OLS-estimates with absolute t-values in parentheses

	Net operating surplus		Gross operating surplus	
	A	B	A	B
Specially adapted dwellings (<i>SAD</i>)	-28.149 (0.59)	-24.588 (0.51)	4.,031 (1.10)	49.303 (1.33)
Nursing homes (<i>NA</i>)	-142,97 (3.73)	-141.622 (3.65)	-107.08 (3.63)	-100.716 (3.38)
Change in per capita revenues (NOK 1000)	272,725 (8.04)	277.629 (7.94)	400.314 (15.68)	398.585 (15.13)
Change in share 0-5 years		-3452.16 (0.16)		5835.97 (0.35)
Change in share 6-15 years		-624.301 (0.03)		5017.30 (0.36)
Change in share 67-79 years		4668.316 (0.29)		19201.6 (1.56)
Change in share 80 years and above		-21133.2 (0.74)		-1140.9 (0.05)
# of local governments	431	431	415	415
R_{adj}^2	0.16	0.16	0.40	0.40

The change in per capita revenues is the control variable with strongest impact on the change in the net operating surplus. A revenue increase of NOK 1000 will increase the net operating surplus by around NOK 275. This quantitative effect is in line with an earlier analysis of budget deficits in Norwegian local governments by Borge (2005). The operating surplus seems to be unaffected by demographic change.

5. Concluding remarks

The purpose of this paper was to investigate whether the Action Plan for the Elderly (APE) had unintended consequences for the budget deficit and services for the young. The main financial element in APE was a temporary investment grant of a matching type. This type of grant is likely to have adverse effects for other services and the budgetary balance. We investigate whether APE had such adverse effects using a difference-in-differences approach. We find evidence that APE reduced the growth in child care coverage and increased the budget deficit.

References

- Baicker, K. and N. Gordon (2006). The effect of state education finance reform on total local resources. *Journal of Public Economics* 90, 1519-1535.
- Borge, L.-E. (2005). Strong politicians, small deficits: Evidence from Norwegian local governments. *European Journal of Political Economy* 21, 325-344.
- Borge, L.-E. and J. Rattsø (2006). Young and old competing for public welfare services. Working Paper, Department of Economics, Norwegian University of Science and Technology.
- Dahlberg, M., E. Mörk, J. Rattsø and H. Ågren (2007). Using a discontinuous grant rule to identify the effect of grants on local taxes and spending. *Journal of Public Economics*, forthcoming.
- Gordon, N. (2004). Do federal grants boost school spending? Evidence from Title I. *Journal of Public Economics* 88, 1771-1792.
- Harris, A., W.N. Evans and R. Schwab (2001). Public education financing in an aging America. *Journal of Public Economics* 81, 449-72.
- Knight, B. (2001). Endogenous federal grants and crowd-out of state governments spending: Theory and evidence from the federal highway aid program. *American Economic Review* 92, 71-92.
- Poterba, J. (1997). Demographic structure and the political economy of public education. *Journal of Policy Analysis and Management* 16, 48-66.